CLAIMS:

What is claimed is:

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A method for the fabrication of a Schottky barrier diode on a SiC wafer, comprising the steps of:

- (a) placing a mask having a window on a surface of the SiC wafer;
- (b) depositing conductive material on the mask and exposed portions of the wafer surface;
- (c) stripping off the mask so as to leave the conductive material deposited upon portions of the wafer surface; and
- (d) implanting an edge termination layer to the wafer beneath the surface thereof but not beneath the conductive material.
- 2. The method for the fabrication of a Schottky barrier diode on a SiC wafer as described in claim 1, further comprising the steps of:
 - (a) before placing the mask, forming an insulating layer on the surface of the wafer;
 - (b) applying the mask to the insulating layer; and
 - (c) etching away a portion of the insulating layer that is within the window to expose the SiC wafer therebeneath before depositing the conductive material.

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The method for the fabrication of a Schottky barrier diode as described in claim 2, wherein the step of forming an insulating layer comprises forming an oxide layer.

- 4. The method for the fabrication of a Schottky barrier diode as described in claim 3, wherein the step of implanting an edge termination layer comprises implanting inert ions.
- 5. The method for the fabrication of a Schottky barrier diode as described in claim 4, wherein the inert ion comprises argon ions.

The method for the fabrication of a Schottky barrier diode as described in claim 2, further comprising the step of applying a treatment to the exposed portion of the SiC wafer surface.

- 7. The method for the fabrication of a Schottky barrier diode as described in claim 1, further comprising the step of depositing a passivation layer over the conductive material and the wafer and removing portions of the passivation layer that cover the conductive material.
- 8. The method for the fabrication of a Schottky barrier diode as described in claim 1 wherein the conductive material is a metal.

SUBY/

A Schottky barrier diode, comprising:

- (a) a SiC wafer having a first surface;
- (b) a conductive layer formed on a portion of the first surface; and
- (c) an edge termination layer implanted in the wafer so as to reside beneath a portion of the first surface that is not beneath the conductive layer.
- 10. The Schottky barrier diode as described in claim 9, further comprising an insulating layer formed on portions of the first surface not under the conductive layer.
- 11. The Schottky barrier diode as described in claim 10, wherein the insulating layer is a low temperature oxide.
- 12. The Schottky barrier diode as described in claim 10, wherein the insulating layer is a thermally grown oxide.
- 13. The Schottky barrier diode as described in claim 11, wherein the low temperature oxide is silicon dioxide.
- 14 / The Schottky barrier diode as described in claim 13 wherein the thermally grown oxide is silicon dioxide.

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- 15. The Schottky barrier diode as described in claim 9, wherein the conductive layer is formed of a metal.
- 16. The Schottky barrier diode as described in claim 15, wherein the metal is titanium.
- 17. The Schottky barrier diode as described in claim 9, wherein the conductive layer has a thickness greater than a thickness of the insulating layer.

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